

FIG. 1

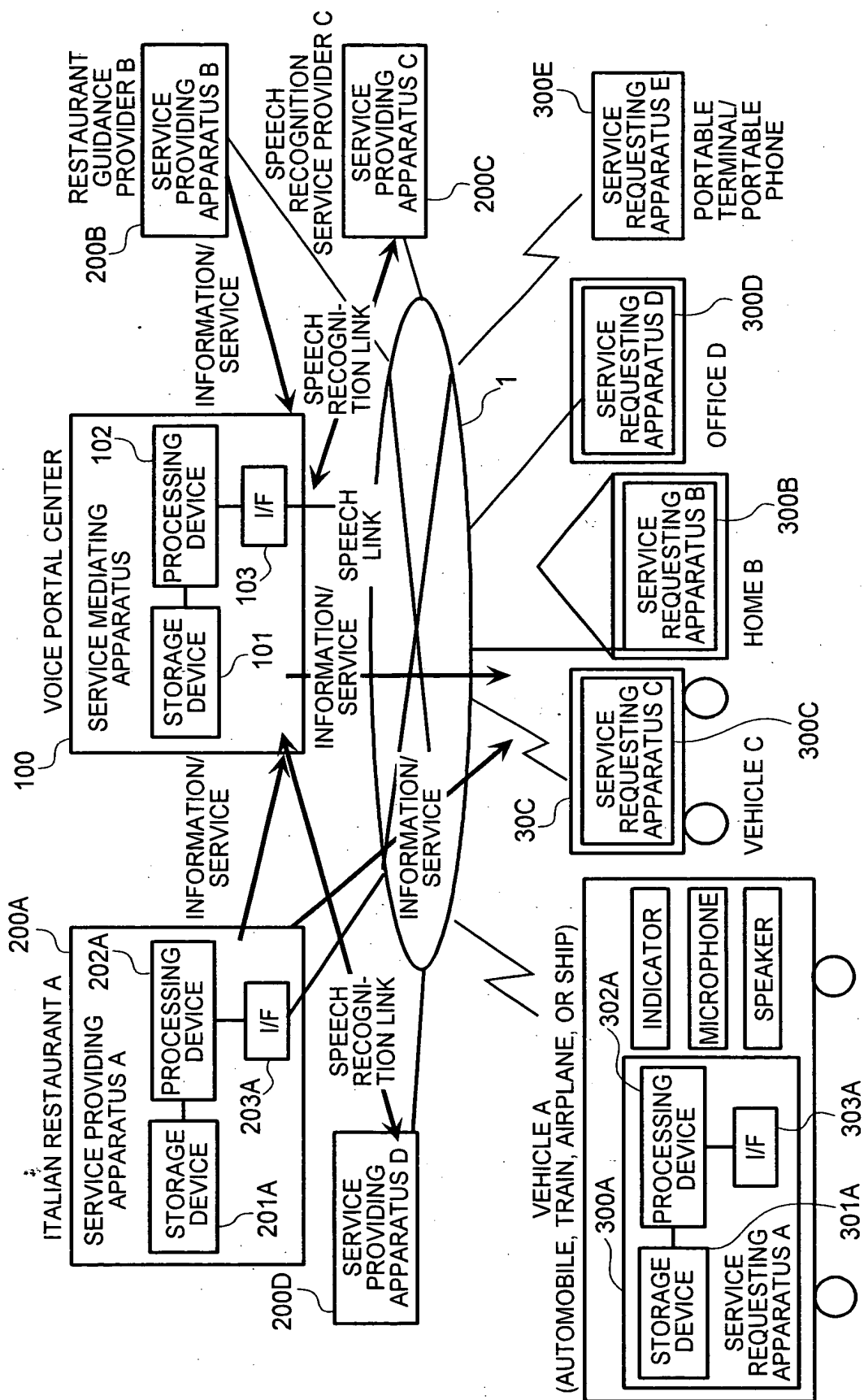


FIG. 2

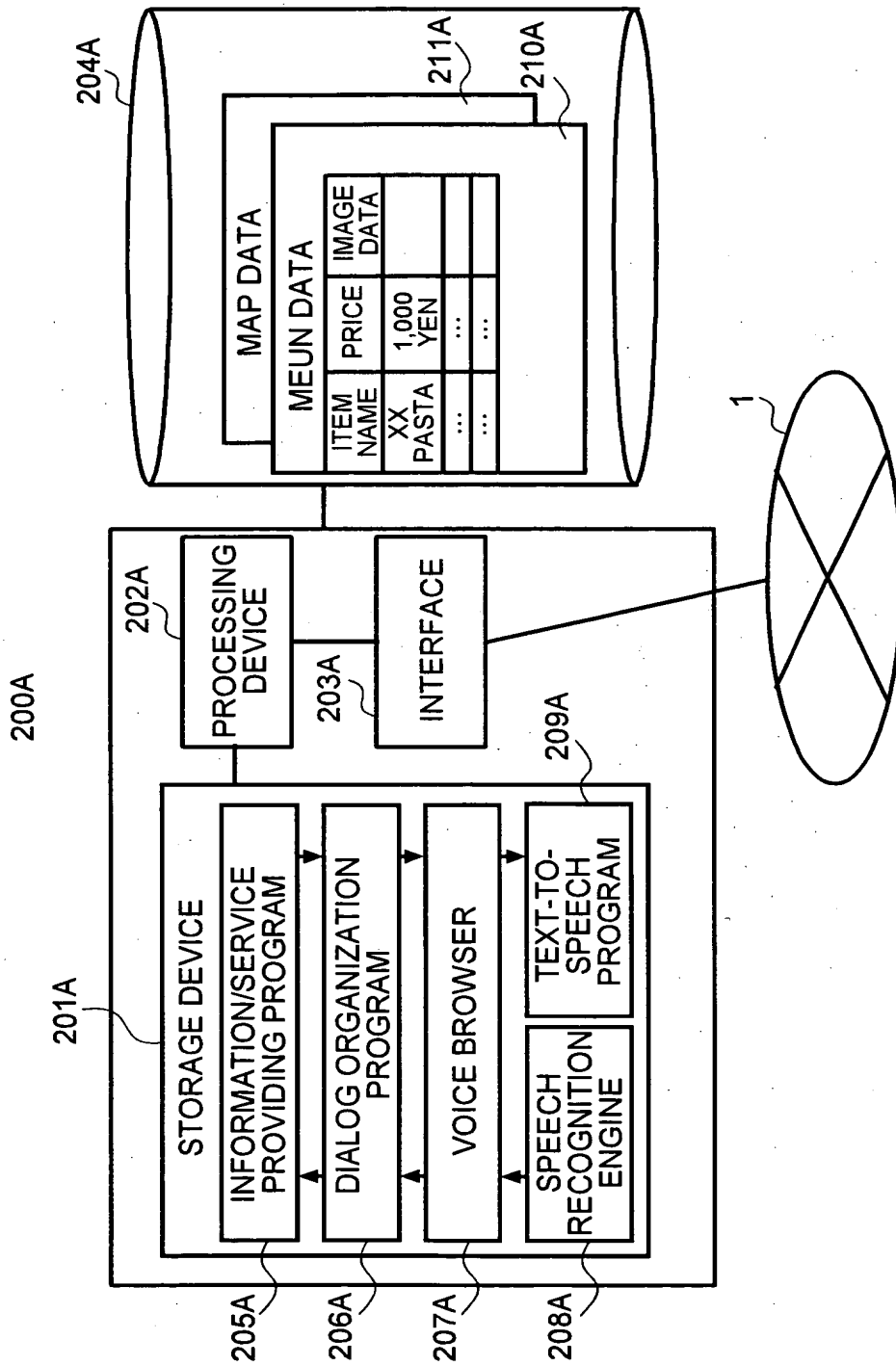


FIG. 3

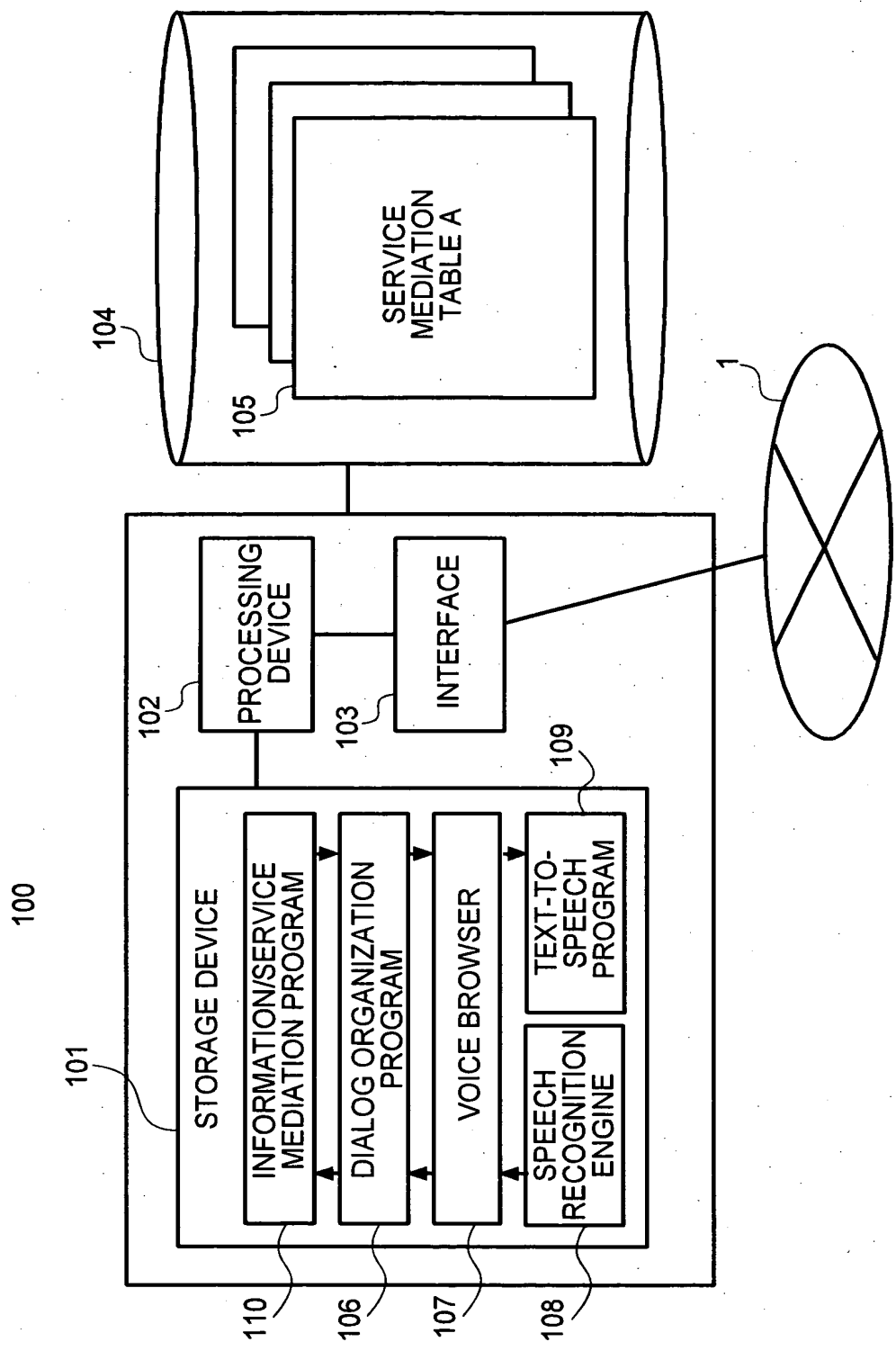


FIG. 4

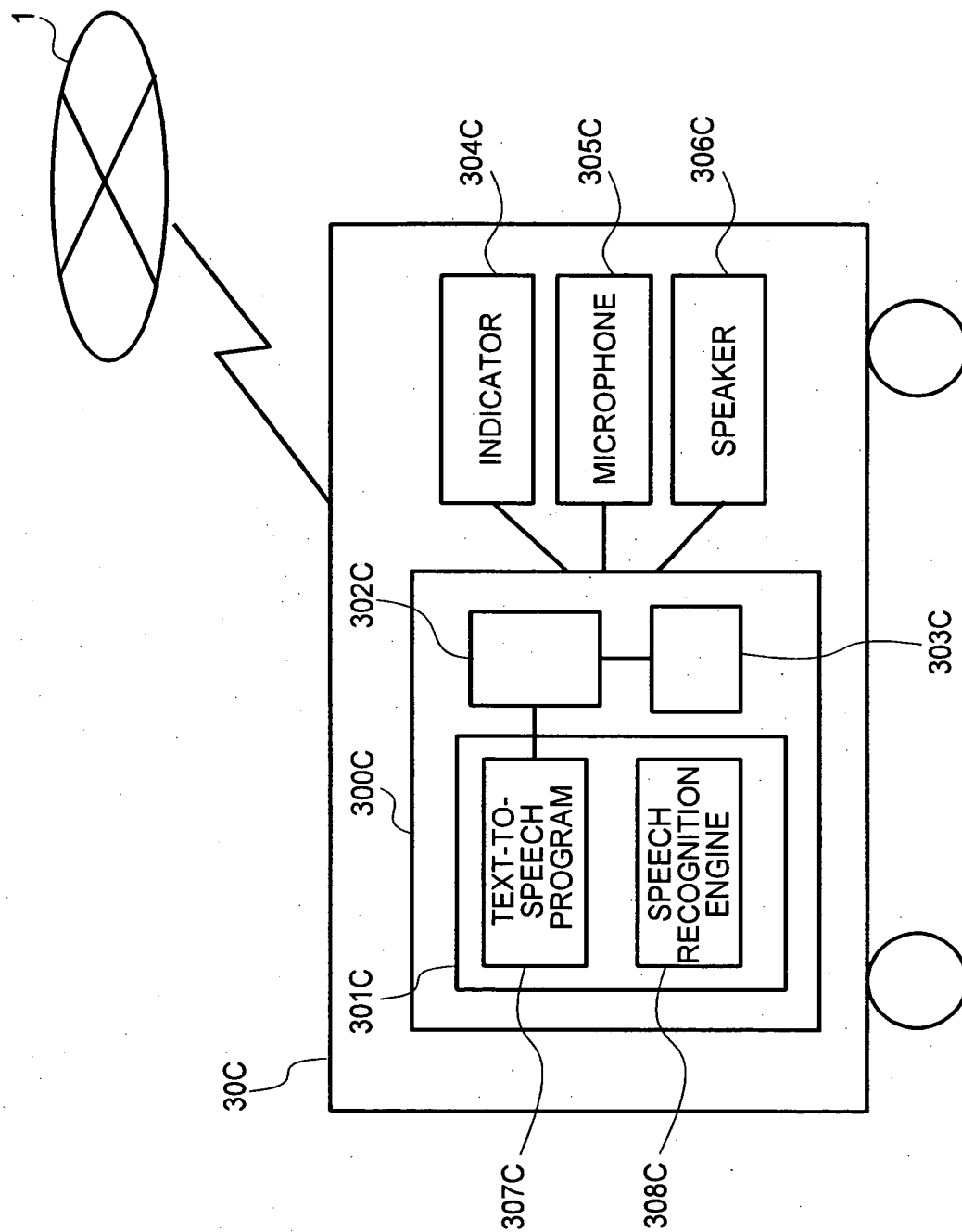
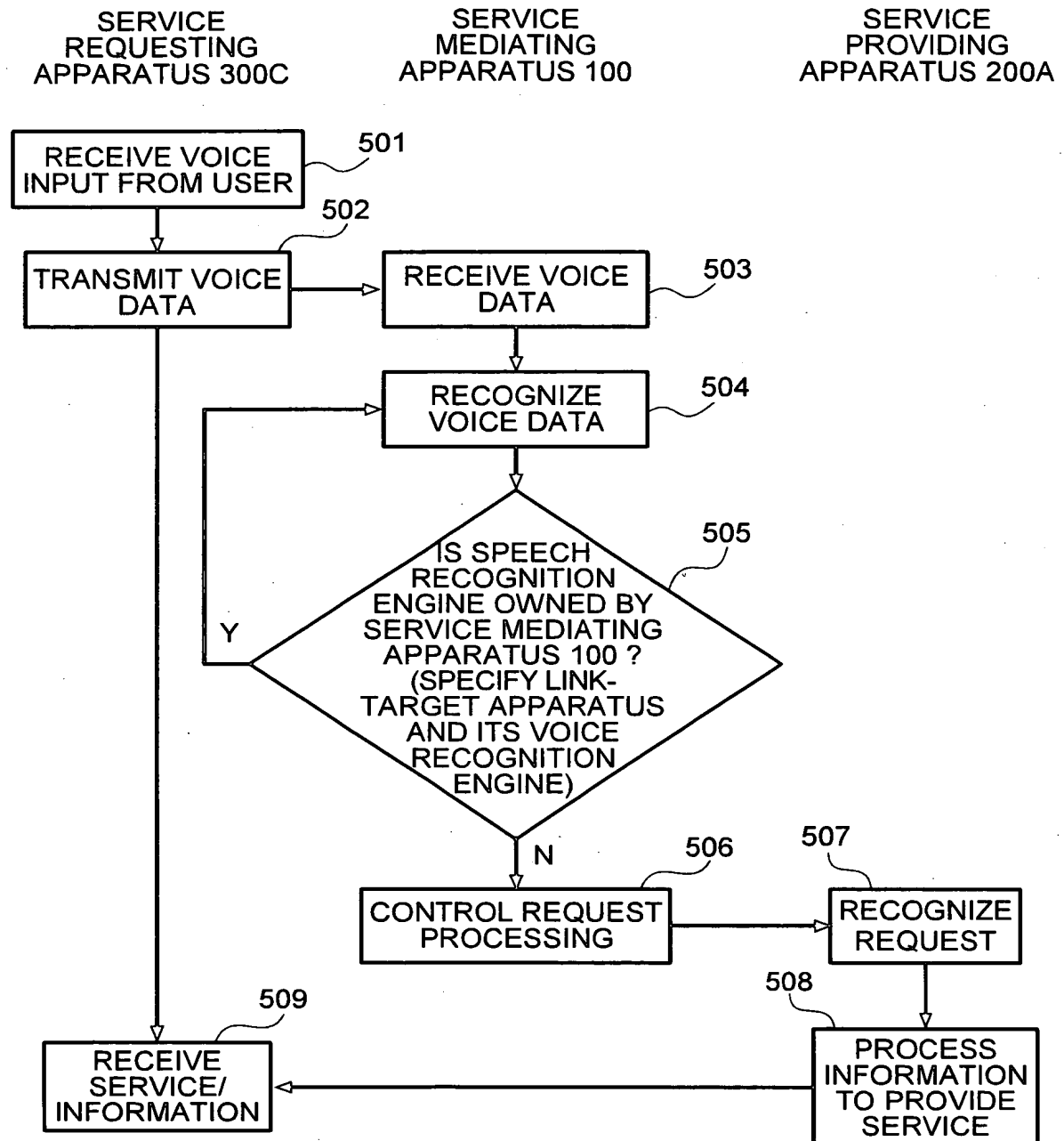


FIG.5



6811

FIG.6

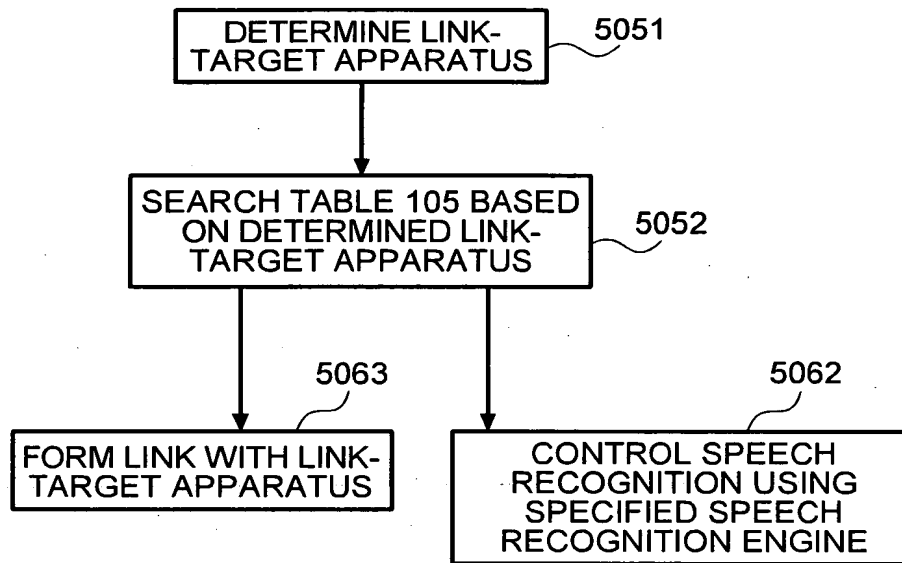


FIG.7

<menu>

<prompt>SELECT A SHOP</prompt>

A<link="jump SERVICE PROVIDING APPARATUS 200A"

"engine SERVICE PROVIDING APPARATUS 200A"

⋮

</menu>

FIG.8

TABLE 1 COMMUNICATION DATA FORMATS AND COMMUNICATION PROTOCOLS EMPLOYED BETWEEN TERMINALS OF SERVICE REQUESTING APPARATUSES AND SERVICE MEDIATING APPARATUS

SERVICE REQUESTING APPARATUS	SERVICE MEDIATING APPARATUS	DATA FORMAT	COMMUNICATION PROTOCOL	DESCRIPTION
VOICE BROWSER	DIALOG CONTROL	VXML DATA	HTTP	
DIALOG RECOGNITION	DIALOG CONTROL	SEMANTIC DATA	TCP	VOICE DIALOG LINK
SPEECH RECOGNITION	VOICE BROWSER	SPEECH RECOGNITION DATA	TCP	
SPEECH RECOGNITION	SPEECH RECOGNITION	SPEECH RECOGNITION DATA CODED VOICE DATA FOR VOICE RECOGNITION	TCP TCP/UDP	SPEECH RECOGNITION LINK
VOICE ANALYSIS	SPEECH RECOGNITION	CODED VOICE DATA FOR VOICE RECOGNITION	TCP/UDP	
VOICE INPUT	SPEECH RECOGNITION	VOICE	VOICE CALL	CT(Computer Telephony)

TABLE 2 COMMUNICATION DATA FORMATS AND COMMUNICATION PROTOCOLS EMPLOYED BETWEEN SERVICE MEDIATING APPARATUS AND SERVICE PROVIDING APPARATUSES

SERVICE MEDIATING APPARATUS OR SERVICE PROVIDING APPARATUS (LOCAL)	SERVICE MEDIATING APPARATUS OR SERVICE PROVIDING APPARATUS (DESTINATION)	DATA FORMAT	COMMUNICATION PROTOCOL	DESCRIPTION
DIALOG RECOGNITION	DIALOG RECOGNITION	DIALOG DATA SPEECH RECOGNITION DATA CODED VOICE DATA FOR VOICE RECOGNITION	IIOP(CORBA) IIOP(CORBA) TCP/UDP	SPEECH RECOGNITION LINK
SPEECH RECOGNITION	SPEECH RECOGNITION	SPEECH RECOGNITION DATA CODED VOICE DATA FOR SPEECH RECOGNITION	IIOP(CORBA) TCP/UDP	SPEECH RECOGNITION LINK

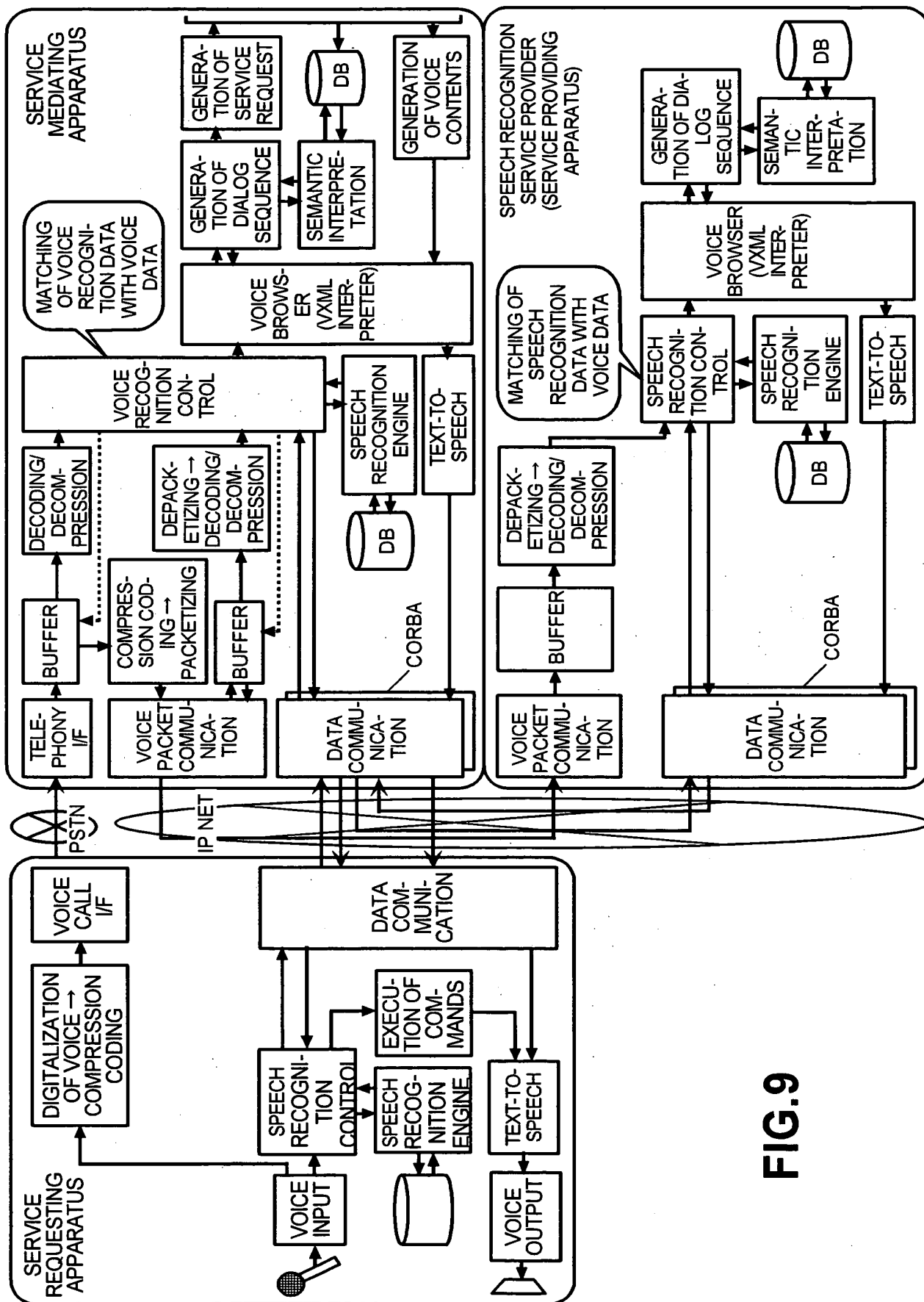


FIG.10

105

105-1

105-2

SELECTIONS				SEARCH FOR SPEECH RECOGNITION ENGINE	
CATEGORY	SUBCATEGORY	NAME OF ESTABLISHMENT	EVALUATION	LINK-TARGET APPARATUS	SPEECH RECOGNITION ENGINE
RESTAURANT	ITALIAN	A	TASTE :GOOD, PRICE :HIGH, PARKING CAPACITY :10 CARS, SERVICE HOURS :10:00-22:00	SERVICE PROVIDING APPARATUS 200-A	SERVICE PROVIDING APPARATUS 200-A
		B	...	SERVICE PROVIDING APPARATUS 200-B	SERVICE PROVIDING APPARATUS 200-C
		C	...	SERVICE PROVIDING APPARATUS 200-B	SERVICE PROVIDING APPARATUS 300
THEME PARK	AMUSEMENT PARK

FIG.11

<menu>

<prompt>SELECT A SHOP</prompt>

<link jump="SERVICE PROVIDING APPARATUS 200A"
engine="ngram bergein nbest confidence"

⋮

</menu>

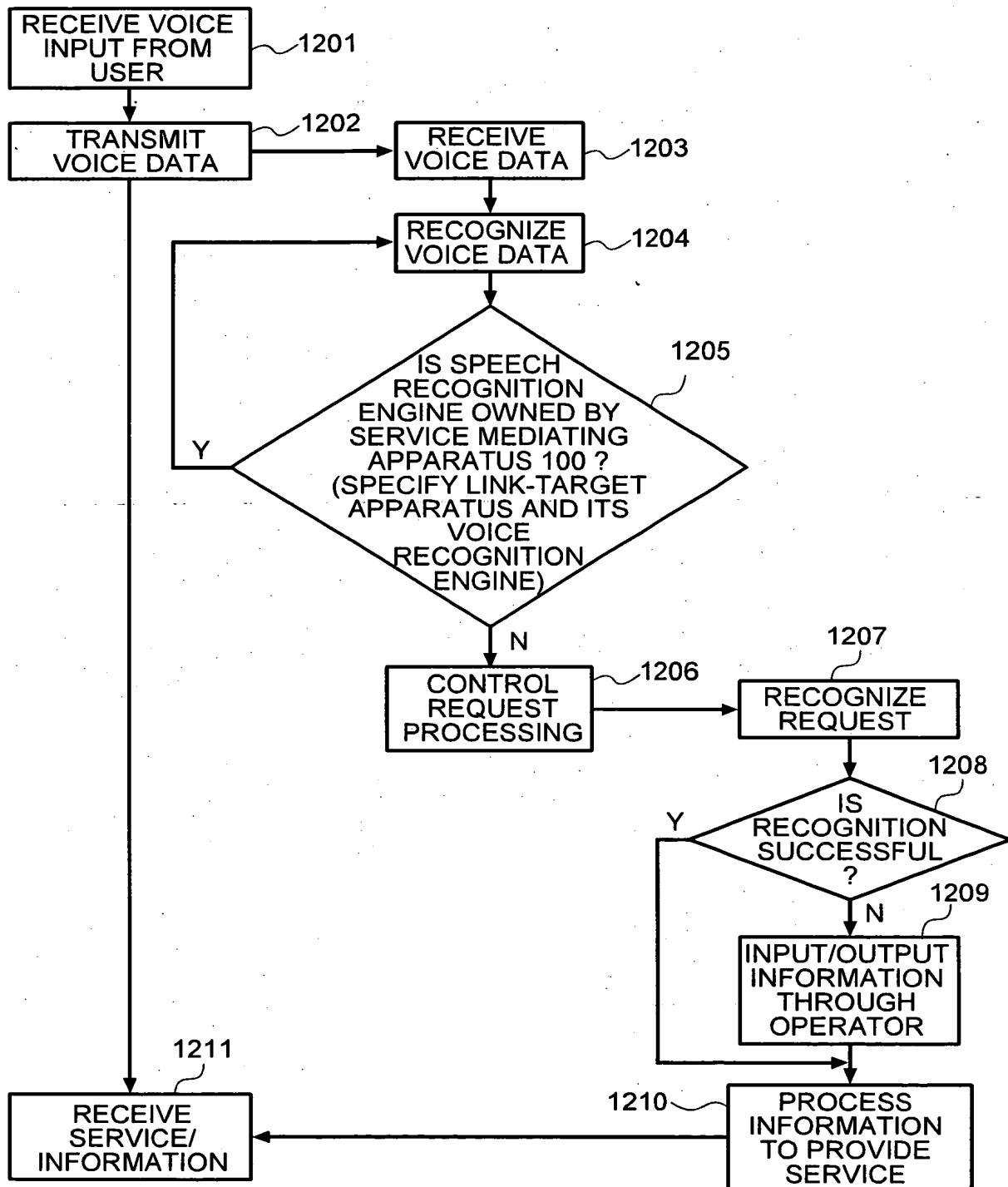
10811

FIG.12

SERVICE REQUESTING
APPARATUS 300C

SERVICE MEDIATING
APPARATUS 100

SERVICE PROVIDING
APPARATUS 200A



Drawings

Figure 1:

100 ... SERVICE MEDIATING APPARATUS

101 ... STORAGE DEVICE

102 ... PROCESSING DEVICE

200A ... SERVICE PROVIDING APPARATUS A

201A ... STORAGE DEVICE

202A ... PROCESSING DEVICE

200B ... SERVICE PROVIDING APPARATUS B

200C ... SERVICE PROVIDING APPARATUS C

200D ... SERVICE PROVIDING APPARATUS D

300A ... SERVICE REQUESTING APPARATUS A

301A ... STORAGE DEVICE

302A ... PROCESSING DEVICE

300B ... SERVICE REQUESTING APPARATUS B

300C ... SERVICE REQUESTING APPARATUS C

300D ... SERVICE REQUESTING APPARATUS D

300E ... SERVICE REQUESTING APPARATUS E

(1) ... ITALIAN RESTAURANT

(2) ... INFORMATION/SERVICE

(3) ... VOICE PORTAL CENTER

(4) ... RESTAURANT GUIDANCE PROVIDER B

(5) ... SPEECH RECOGNITION LINK

(6) ... SPEECH RECOGNITION SERVICE PROVIDER C

(7) ... SPEECH RECOGNITION SERVICE PROVIDER D

(8) ... VEHICLE A (AUTOMOBILE, TRAIN, AIRPLANE, OR SHIP)

(9) ... INDICATOR

(10) ... MICROPHONE

(11) ... SPEAKER

(12) ... VEHICLE C

(13) ... HOME B

(14) ... OFFICE D

(15) ... PORTABLE TERMINAL/PORTABLE PHONE

Figure 2:

201-A ... STORAGE DEVICE

202A ... PROCESSING DEVICE

203A ... INTERFACE

205A ... INFORMATION/SERVICE PROVIDING PROGRAM

206A ... DIALOG ORGANIZATION PROGRAM

207A ... VOICE BROWSER

208A ... SPEECH RECOGNITION ENGINE

209A ... TEXT-TO-SPEECH PROGRAM

(1) ... ITEM NAME

(2) ... PRICE

(3) ... IMAGE DATA

(4) ... XX PASTA

(5) ... 1,000 YEN

(6) ... MAP DATA

Figure 3:

101 ... STORAGE DEVICE
102 ... PROCESSING DEVICE
103 ... INTERFACE
105 ... SERVICE MEDIATION TABLE A
106 ... DIALOG ORGANIZATION PROGRAM
107 ... VOICE BROWSER
108 ... SPEECH RECOGNITION ENGINE
109 ... TEXT-TO-SPEECH PROGRAM
110 ... INFORMATION/SERVICE MEDIATION PROGRAM

Figure 4:

304C ... INDICATOR
305C ... MICROPHONE
306C ... SPEAKER
307C ... TEXT-TO-SPEECH PROGRAM
308C ... SPEECH RECOGNITION ENGINE

Figure 5:

100 ... SERVICE MEDIATING APPARATUS 100
200A ... SERVICE PROVIDING APPARATUS 200A
300C ... SERVICE REQUESTING APPARATUS 300C
501 ... RECEIVE VOICE INPUT FROM USER
502 ... TRANSMIT VOICE DATA

503 ... RECEIVE VOICE DATA
 504 ... RECOGNIZE VOICE DATA
 505 ... IS SPEECH RECOGNITION ENGINE OWNED BY
 SERVICE MEDIATING APPARATUS 100 ? (SPECIFY LINK-TARGET
 APPARATUS AND ITS SPEECH RECOGNITION ENGINE)
 506 ... CONTROL REQUEST PROCESSING
 507 ... RECOGNIZE REQUEST
 508 ... PROCESS INFORMATION TO PROVIDE SERVICE
 509 ... RECEIVE SERVICE/INFORMATION

Figure 6:

5051 ... DETERMINE LINK-TARGET APPARATUS
 5052 ... SEARCH TABLE 105 BASED ON DETERMINED LINK-
 TARGET APPARATUS
 5062 ... CONTROL SPEECH RECOGNITION USING SPECIFIED
 SPEECH RECOGNITION ENGINE
 5063 ... FORM LINK WITH LINK-TARGET APPARATUS

Figure 7:

<prompt>SELECT A SHOP</prompt>
 A<link="jump SERVICE PROVIDING APPARATUS 200A"
 "engine SERVICE PROVIDING APPARATUS 200A"

Figure 8:

(1) ... TABLE 1

(2) ... COMMUNICATION DATA FORMATS AND COMMUNICATION PROTOCOLS EMPLOYED BETWEEN TERMINALS OF SERVICE REQUESTING APPARATUSES AND SERVICE MEDIATING APPARATUS

(3) ... SERVICE REQUESTING APPARATUS

(4) ... VOICE BROWSER

(5) ... DIALOG ORGANIZATION

(6) ... SPEECH RECOGNITION

(7) ... VOICE ANALYSIS

(8) ... VOICE INPUT

(9) ... SERVICE MEDIATING APPARATUS

(10) ... DATA FORMAT

(11) ... VXML DATA

(12) ... SEMANTIC DATA

(13) ... SPEECH RECOGNITION DATA

(14) ... CODED VOICE DATA FOR SPEECH RECOGNITION

(15) ... VOICE

(16) ... COMMUNICATION PROTOCOL

(17) ... VOICE CALL

(18) ... DESCRIPTION

(19) ... VOICE DIALOG LINK

(20) ... SPEECH RECOGNITION LINK

(21) ... TABLE 2

(22) ... COMMUNICATION DATA FORMATS AND COMMUNICATION PROTOCOLS EMPLOYED BETWEEN SERVICE MEDIATING APPARATUS AND SERVICE PROVIDING APPARATUSES

(23) ... SERVICE MEDIATING APPARATUS OR SERVICE PROVIDING APPARATUS (LOCAL)

(24) ... SERVICE MEDIATING APPARATUS OR SERVICE PROVIDING APPARATUS (DESTINATION)

(25) ... DIALOG DATA

Figure 9:

- (1) ... SERVICE REQUESTING APPARATUS
- (2) ... DIGITALIZATION OF VOICE → COMPRESSION CODING
- (3) ... VOICE CALL I/F
- (4) ... VOICE INPUT
- (5) ... SPEECH RECOGNITION CONTROL
- (6) ... SPEECH RECOGNITION ENGINE
- (7) ... EXECUTION OF COMMANDS
- (8) ... DATA COMMUNICATION
- (9) ... VOICE OUTPUT
- (10) ... TEXT-TO-SPEECH
- (11) ... TELEPHONY I/F
- (12) ... BUFFER
- (13) ... DECODING/DECOMPRESSION
- (14) ... VOICE PACKET COMMUNICATION
- (15) ... COMPRESSION CODING → PACKETIZING
- (16) ... DEPACKETIZING → DECODING/DECOMPRESSION
- (17) ... MATCHING OF SPEECH RECOGNITION DATA WITH VOICE DATA

- (18) ... SERVICE MEDIATING APPARATUS
 - (19) ... VOICE BROWSER (VXML INTERPRETER)
 - (20) ... GENERATION OF DIALOG SEQUENCE
 - (21) ... GENERATION OF SERVICE REQUEST
 - (22) ... SEMANTIC INTERPRETATION
 - (23) ... GENERATION OF VOICE CONTENTS
 - (24) ... VOICE PACKET COMMUNICATION
 - (25) ... SPEECH RECOGNITION SERVICE PROVIDER
- (SERVICE PROVIDING APPARATUS)
- (26) ... IP NETWORK

Figure 10:

- (1) ... SELECTIONS
- (2) ... CATEGORY
- (3) ... RESTAURANT
- (4) ... THEME PARK
- (5) ... SUBCATEGORY
- (6) ... ITALIAN
- (7) ... JAPANESE
- (8) ... AMUSEMENT PARK
- (9) ... NAME OF ESTABLISHMENT
- (10) ... EVALUATION
- (11) ... TASTE: GOOD, PRICE: HIGH, PARKING CAPACITY:
10 CARS, SERVICE HOURS: 10:00-22:00
- (12) ... SEARCH FOR SPEECH RECOGNITION ENGINE

- (13) ... SERVICE PROVIDING APPARATUS
- (14) ... SPEECH RECOGNITION ENGINE
- (15) ... LINK-TARGET APPARATUS

Figure 11:

```
<prompt>SELECT A SHOP</prompt>
<link jump="SERVICE PROVIDING APPARATUS 200A"
```

Figure 12:

```
100 ... SERVICE MEDIATING APPARATUS 100
200A ... SERVICE PROVIDING APPARATUS 200A
300C ... SERVICE REQUESTING APPARATUS 300C
1201 ... RECEIVE VOICE INPUT FROM USER
1202 ... TRANSMIT VOICE DATA
1203 ... RECEIVE VOICE DATA
1204 ... RECOGNIZE VOICE DATA
1205 ... IS SPEECH RECOGNITION ENGINE OWNED BY
SERVICE MEDIATING APPARATUS 100 ? (SPECIFY LINK-TARGET
APPARATUS AND ITS SPEECH RECOGNITION ENGINE)
1206 ... CONTROL REQUEST PROCESSING
1207 ... RECOGNIZE REQUEST
1208 ... IS RECOGNITION SUCCESSFUL ?
1209 ... INPUT/OUTPUT INFORMATION THROUGH OPERATOR
1210 ... PROCESS INFORMATION TO PROVIDE SERVICE
1211 ... RECEIVE SERVICE/INFORMATION
```